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Patent claims

1. Optical recording material for binary and/or multibit and/or volume data storage, comprising at least one polymeric and/or oligomeric azo dyestuff which changes its spatial arrangement on irradiation with polarized electromagnetic radiation, and optionally at least one grouping having form anisotropy, characterized in that

   - the absorption maximum of the dyestuff is at least 30 nm, preferably 40 nm, different from 400 nm and

   - at 400 nm the dyestuff reaches an optical density of not more than 60% of its absorption maximum and

   - there is the capacity for being rewritten on by changing the state of polarization of the actinic light, an intensity of at least 80% of the original value being achieved after a deletion/rewriting cycle, and

   - wherein at 400 nm, under otherwise identical conditions, the writing operation proceeds no more slowly than at 500 nm, and birefringence values induced here do not differ from those birefringence values induced at 500 nm by more than 10%.

2. Recording material according to claim 1, characterized in that the absorption maximum (AM) of the dyestuff is less than 370 nm, preferably 360 nm.

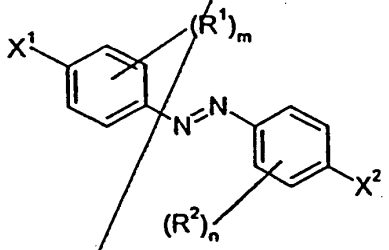
3. Recording material according to claim 1, characterized in that the absorption maximum of the dyestuff is greater than 450 nm.

4. Recording material according to claim 1, characterized in that it comprises a copolymer which comprises at least one component of which the AM is greater than 450 nm, and at least one component of which the AM is less than 360 nm.

5. Recording material according to one or more of claims 1 to 4, characterized in that in the solid state at a thickness of 250 nm it has an optical density of ≤ 1, preferably less than or equal to 0.5, especially preferably less than or equal to 0.3, at a wavelength in a wavelength range from 380 to 420 nm, preferably 390 to 410 nm, especially preferably 395 to 405 nm.

6. Recording material according to one or more of claims 1 to 5, characterized in that the electromagnetic radiation is light in the laser wavelength range of preferably between 380 to 420 nm, particularly preferably between 390 and 410 nm, especially preferably between 395 and 405 nm.

7. Recording material according to any one of claims 1 to 6, characterized in that the chemically bonded dyestuff corresponds to the formula (I):



(I),

wherein

R^1 and R^2 independently of one another represent hydrogen or a nonionic substituent and

m and n independently of one another represent an integer from 0 to 4, preferably 0 to 2, where

X^1 and X^2 denote $X^{1'}$-R^3 or $X^{2'}$-R^4, and

$X^{1'}$ and $X^{2'}$ represent a direct bond, -O-, -S-, -(N-R^5)-, -C(R^6R^7)-, -(C=O)-, -(CO-O)-, -(CO-NR^5)-, -(SO_2)-, -(SO_2-O)-, -(SO_2-NR^5)-, -(C=NR^8)- or -(CNR^8-NR^5)-,

R^3, R^4, R^5 and R^8 independently of one another represent hydrogen, C_1- to C_{20}-alkyl, C_3- to C_{10}-cycloalkyl, C_2- to C_{20}-alkenyl, C_6- to C_{10}-aryl, C_1- to C_{20}-alkyl-(C=O)-, C_3- to C_{10}-cycloalkyl-(C=O)-, C_2- to C_{20}-alkenyl-(C=O)-, C_6- to C_{10}-aryl-(C=O)-, C_1- to C_{20}-alkyl-(SO_2)-, C_3- to C_{10}-cycloalkyl-(SO_2)-, C_2- to C_{20}-alkenyl-(SO_2)- or C_6- to C_{10}-aryl-(SO_2)- or

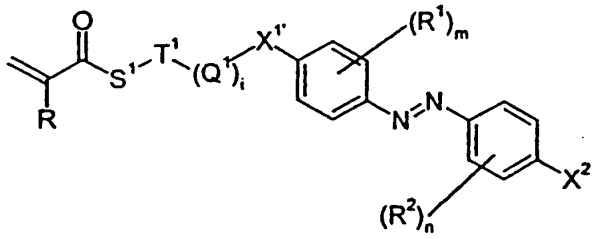
$X^{1'}$-R^3 and $X^{2'}$-R^4 can represent hydrogen, halogen, cyano, nitro, CF_3 or CCl_3,

R^6 and R^7 independently of one another represent hydrogen, halogen, C_1- to C_{20}-alkyl, C_1- to C_{20}-alkoxy, C_3- to C_{10}-cycloalkyl, C_2- to C_{20}-alkenyl or C_6- to C_{10}-aryl.

wherein the sensitivity of the dyestuff to actinic light after the induced birefringence has been written in is retained at a final value,

and this sensitivity is at least 5%, preferably 10%, particularly preferably 15%, especially preferably 20% of the original value when the longitudinal axis of the molecule lies perpendicular to the direction of polarization of the actinic light.

8. Recording material according to any one of claims 1 to 7, characterized in that at least one monomer of the formula (II)



(II),

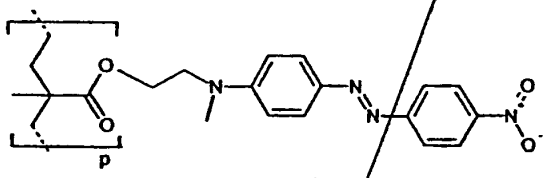
wherein

R represents hydrogen or methyl and

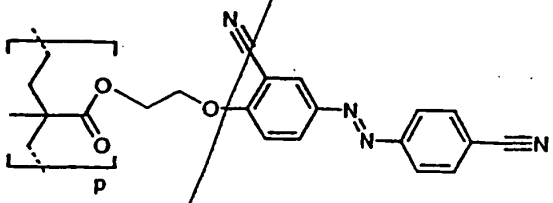
the other radicals have the abovementioned meaning,

has been used in the preparation.

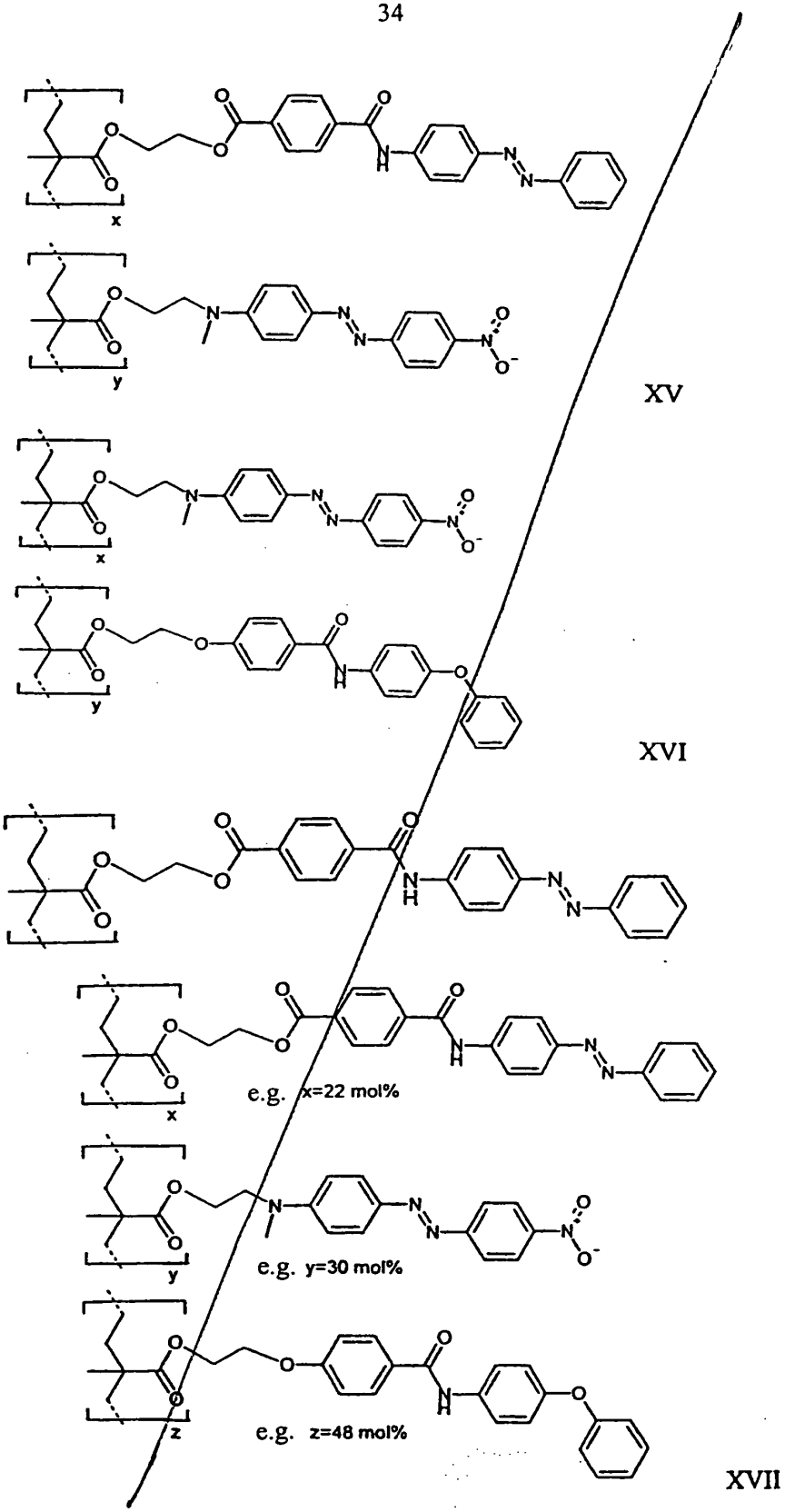
9. Recording material according to any one of claims 1 to 8, characterized in that it comprises at least one of the polymers of the formula XIII to XX

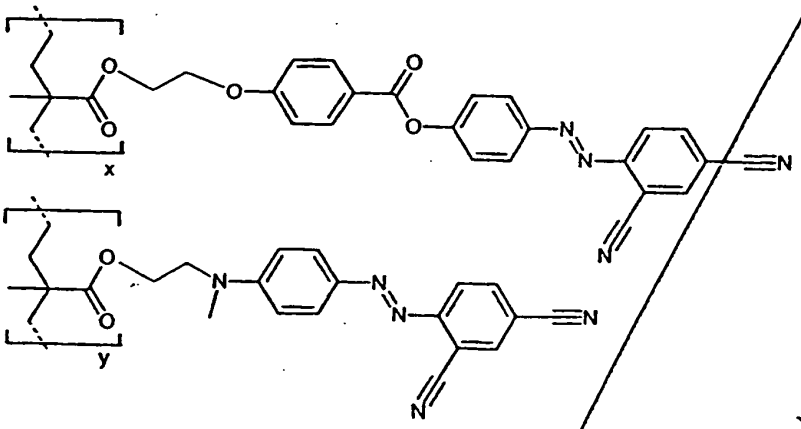


XIII

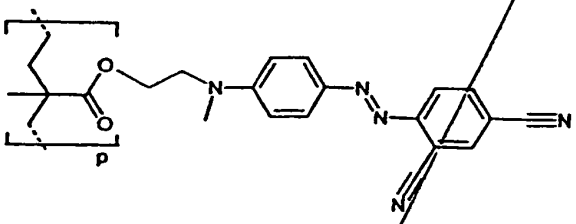


XIV

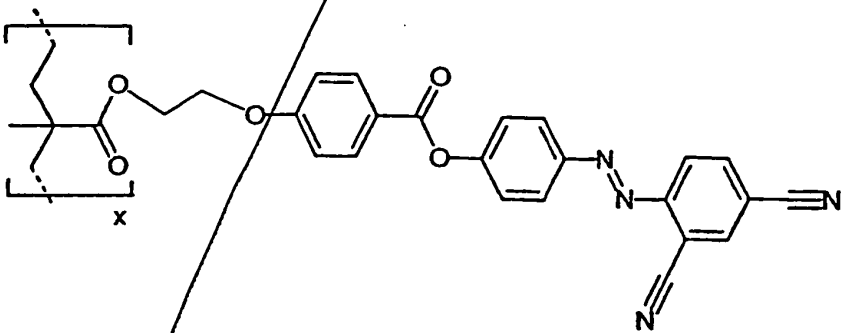

XV
XVI
e.g. x=22 mol%
e.g. y=30 mol%
e.g. z=48 mol%
XVII



XVIII



XIX



XX

wherein the compositions in the co- and terpolymers can vary, provided that x + y adds up to 100 mol%, or x + y + z adds up to 100 mol%.

10. Recording material according to claim 9, characterized in that p is between 10 and 1,000 and/or in the case of the copolymers x : y is between 10:90 and 90:10, preferably between 30:70, particularly preferably between 40:60 and 60:40, and especially preferably 50:50, and/or in the case of terpolymers x + y is greater than 10 mol%, preferably greater than 20 mol%, particularly preferably greater than 30 mol%.

11. Storage system, characterized in that it comprises a recording material according to any of claims 1 to 10.

12. Storage system according to claim 11, characterized in that the recording material comprises one or more unsupported objects of any desired shape, preferably an unsupported flat structure, particularly preferably an unsupported film, a multi-layer build-up preferably comprising at least one substrate layer.

13. Storage system according to claim 11, characterized in that it also additionally comprises a reflection layer.

14. Process for the production of the storage system according to at least one of claims 11 or 12, or 13, characterized in that it comprises a step in which the storage medium is applied by spin-coating.